
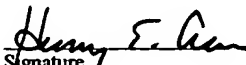


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July 30, 2004 Date	  Signature <u>Henry E. Auer</u> Typed name of person signing Certificate

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

Application No.: **10/687,012**      Group Art Unit: **2859**  
Filing Date: **October 16, 2003**      Examiner: **Arana, L. M.**  
Inventor: **Romalis et al.**  
Title of Application: **High Sensitivity Atomic Magnetometer and Methods for Using Same**

Mail Stop Amendment  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

**LETTER OF TRANSMITTAL: INFORMATION DISCLOSURE STATEMENT**

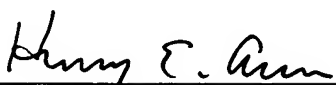
Dear Sir:

Applicants provide herewith an Information Disclosure Statement. This communication includes the following items:


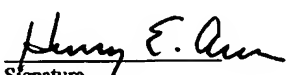
- ☒ Letter, Information Disclosure Statement Under 37 CFR 1.97(b)
- ☒ Substitute for Form 1449/PTO Information Disclosure Statement by Applicant, in Duplicate
- ☒ One copy of each information document, total of 34.
- ☒ Return Post Card

Respectfully submitted,

Date: July 30, 2004

  
Henry E. Auer 39,096  
Agent for Applicant (Reg. No.)

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Filing Date:	<b>October 16, 2003</b>	Examiner:	<b>Arana, L. M.</b>
Inventor:	<b>Romalis et al.</b>		
Title of Application:	<b>High Sensitivity Atomic Magnetometer and Methods for Using Same</b>		

Mail Stop Amendment  
 Commissioner for Patents  
 P.O. Box 1450  
 Alexandria, VA 22313-1450

## INFORMATION DISCLOSURE STATEMENT UNDER 37 CFR 1.97(b)

Dear Sir:

Pursuant to the Duty to Disclose under 37 CFR 1.56, 1.97 and 1.98, the Applicant makes of record the documents listed below, and on the Substitute for Form PTO/1449 enclosed in duplicate with this letter. The order of presentation of the documents is not related to any assessment of their relative importance.

### U. S. Patents

1. US-4,005,355, filed 01-25-1977, to Hopper et al.
2. US-6,472,869, filed 10-29-2002, to Upschulte et al.

### Literature References

1. ----, *SQUID Sensors: Fundamentals, Fabrication and Applications*, Ed. Weinstock, H., Kluwer Academic (1996) (Abstract only).

2. AFFOLDERBACH, C., et al., An all-optical, high sensitivity magnetic gradiometer, *Appl Phys* (2002) B 75: 605-612.
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5. ALLRED, J.C., et al., High-sensitivity atomic magnetometer unaffected by spin-exchange relaxation, *Phys. Rev. Lett.* (2002) 89:130801-1 – 130801-4.
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8. BUDKER, D., et al., Resonant nonlinear magneto-optical effects in atoms, *Rev. Mod. Phys.* (2002) 74:1153-1201.
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10. BUDKER, D., et al., Sensitive magnetometry based on non-linear magneto-optical rotation, *Phys. Rev. A* (2000) 62:043403-1 - 043403-7.
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14. GREENBERG, Ya.S., Application of superconducting quantum interference devices to nuclear magnetic resonance, *Rev. Mod. Phys.* (1998) 70:175-222.
15. HÄMÄLÄINEN M. et al., Magnetoencephalography-theory, instrumentation, and applications to non-invasive studies of the working human brain, *Rev. Mod. Phys.* (1993) 65:413-497 (Abstract and contents only).
16. HAPPER, W., Optical Pumping, *Rev. Mod. Phys.* 1972, 44:169-249 (Abstract and contents only).
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18. HAPPER W. et al., Spin-Exchange Shift and Narrowing of Magnetic Resonance Lines in Optically Pumped Alkali Vapors, *Phys. Rev. Lett.* (1973) **31**:273-276.
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32. ZIMMERMAN, J.E., et al., Design and operation of stable RF-biased superconducting point-contact quantum devices, and a note on properties of perfectly clean metal contacts. *J. Appl. Phys.* (1970) **41**, 1572-1580.

A copy of each information document is enclosed. Applicant requests the Examiner to consider completely each item of information in reaching a determination concerning the patentability of the instant application. The Applicant further requests that the Examiner initial Form PTO/1449 if the reference was considered, whether or not the citation is in conformance with MPEP 609, or to draw a line through the citation if it is not in conformance and was not considered, and to include a copy of the form with the next communication to the Applicant.

By submitting this information, no representation is made (1) that a search was performed, (2) concerning the extent of any search that may have been made, (3) that more relevant information does not exist, (4) that information cited on Form PTO/1449 is, or is considered to be, material to patentability as set forth in 37 CFR 1.56(b), and (5) that information cited is, or is considered to be, prior art as defined by 35 U.S.C. 102.

No item of information contained in the Information Disclosure Statement was cited in a communication from a foreign patent office in a counterpart foreign application.

It is believed that this Information Disclosure Statement is filed prior to the mailing date of the first Office Action on the merits for this application. It is therefore believed that no fee is due with this reply, in accordance with 37 CFR 1.97(b). If there remains nevertheless any fee due, the Commissioner is hereby authorized to charge the required filing fee, or any underpayment thereof, or to credit any overpayment thereof, to Proteus Patent Practice LLC Deposit Account No. 502572, Ref. No. 403-03.

Respectfully submitted,

Date: July 30, 2004

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Substitute for form 1449/PTO  <b>INFORMATION DISCLOSURE STATEMENT BY APPLICANT</b>  (Use as many sheets as necessary)				<b>Complete if known</b>	
				Application Number	10/687,012
				Filing Date	October 16, 2003
				First Named Inventor	Romalis
				Art Unit	2859
				Examiner Name	Arana, L. M.
				Attorney Docket Number	403-03
Sheet	2	of	3		

NON PATENT LITERATURE DOCUMENTS			
Examiner Initials <sup>1</sup>	Cite No. <sup>1</sup>	Include name of the author ( in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T <sup>2</sup>
		- - -, <i>SQUID Sensors: Fundamentals, Fabrication and Applications</i> , Ed. Weinstock, H., Kluwer Academic (1996) (Abstract only).	
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Examiner Signature	Date Considered
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EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

<sup>1</sup>Applicant's unique citation designation number (optional). <sup>2</sup>Applicant is to place a check mark here if English language Translation is attached. This collection of information is required by 37 CFR 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U. S. Patent and Trademark Office, P. O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P. O. Box 1450, Alexandria, VA 22313-1450.

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Sheet	3	of	3		

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